FAA AVIATION NEWS

AUGUST 1973

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COVER:
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FAA AVIATION NEWS

DEPARTMENT OF TRANSPORTATION/FEDERAL AVIATION ADMINISTRATION VOL. 12, NO. 4

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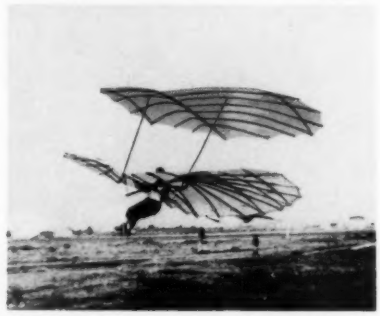

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FAA AVIATION NEWS is published by the Office of Public Affairs, APA-20, Federal Aviation Administration, Washington, D. C. 20591, in the interest of aviation safety and to acquaint readers with the policies and programs of the agency. The use of funds for printing FAA AVIATION NEWS was approved by the Director of the Office of Management and Budget, August 9, 1971. Single copies of FAA AVIATION NEWS may be purchased from the Superintendent of Documents for 35 cents each. All printed materials contained herein are advisory or informational in nature and should not be construed as having any regulatory effect. The FAA does not officially endorse any goods, services, materials, or products of manufacturers.

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Channel Splitting

The family breadwinner with a fixed income but increasing demands for each dollar has some idea of the perplexities that face the frequency management office of FAA: too much demand and too little supply. The agency is responsible for assigning the channels on the very high frequency (VHF) aeronautical mobile (R) band (118.0 to 136.0), designated for air traffic control communications. Since this band is boxed in on either side with frequencies assigned for other purposes, there is no possibility of "stretching" it laterally. Nevertheless, a growing fleet of aircraft, using an ever-expanding system of ground facilities, present continual and pressing demands for more available frequencies.

"Overlapping" is one of the problems that points up the present congestion. If stations that are located geographically too close together are assigned identical frequencies, pilots trying to communicate with one station may be interrupted by transmissions to and from another station. The problem is worse for high-flying aircraft, since their reception range is greater.

The only solution to finding more channels to talk on, within a given band, is to move them closer together on the band. Assigning the available frequencies in a manner that causes the least interference is a mammoth, never-ending headache of a juggling job. The assignment books of the frequency management office are thicker by far than phone directories.

There are presently more than 5,300 FAA air traffic frequency assignments, and demands for more (and requests for changes to minimize interference) are coming in every day. With the 50 kHz spacing of the radios in common use today, the band between 118.0 and 136.0 MHz is capable of containing 360 channels; with 25 kHz spacing the band could accommodate 720. (Actually, since the emergency frequency 121.5 is given 100 kHz protection, the numbers of usable channels are 358 and 716 respectively). What this channel-splitting means to pilots is that instead of the present 50 kHz spacing on a 360-channel transceiver, with two numbers after the decimal point (118.95) the day is coming when you may be using channels with 25 kHz spacing, and three numbers after the point: 118.975. And that, of course, means 720 channel radios in the aircraft.

Since most general aviation transceivers in use today cannot be adapted to 720 channels, the prospect of another split has been viewed with apprehension by some aircraft owners and aviation organizations, who feel that aviation progress often turns out to be expensive for the consumer.

A Constant Expansion

Miscellaneous factors have contributed to the supply-and-demand crunch in frequency assignments during the past two decades. Most basic is, of course, the steady growth of aviation with its increased use of air/ground communications. The growing diversity of air traffic and the ever-expanding sophistication of the methods used for its control and guidance have resulted in a situation where at any given minute there are thousands upon thousands of air/ground radio conversations taking place.

The present situation is in contrast to the early post-WWII days when four air/ground communications channels were adequate for all VFR needs and for reasonable IFR services as well. Even as late as 1960, although 90 channel radios were on the market, the basic VFR package consisted of eleven VHF channels, but they were already beginning to show some congestion. In that year the number of frequencies allotted to air traffic control were doubled and FAA began advising pilots that some day in the future it would be necessary to go to 50 kHz channel spacing. At the same time FAA began modernizing its ground communications equipment to be ready with the new channels when that day arrived.

The uses and demands for radio frequencies continued to grow in a manner that is explained, at least in part, by some significant aviation statistics. In 1955, for instance, there were 60,432 general aviation aircraft and 1,446 airliners; in 1972 the total had about doubled. Equally as pertinent is the increase in FAA facilities—the ground stations which are on the other end of the radio hookup with all those aircraft. In 1955, 100 FAA control towers handled 19.4 million operations. In 1972 there were 308 FAA control towers, handling 53.6 million operations. In 1955 radar was in use at 31 airports—and in no air route traffic control center; in 1972 radar was being used at 126 airports and all 21 centers.

Every time radar is installed it means at least three frequency assignments in that location and at busier airports it takes many times that number. At flight service stations the services provided annually have increased from 5.8 million in 1957 to 50.4 million at present. These include pilot briefs, flight condition messages and flight plan filing, and many are conducted on the air. In September 1970 an FAA Advisory Circular (AC 90-50) was issued, cautioning that 25 kHz spacing would be necessary at some future date. All new equipment ordered by FAA since that time for use on the communication band will be capable of using the split channels.

According to present plans, the new 25 kHz channels will be installed first at high-altitude en route sectors, beginning possibly in certain congested areas in 1976 with much wider high altitude use in 1977. Beyond that no firm schedule has been determined, although a logical sequence would be in low-altitude en route sectors (IFR flight), first on busier routes, then more widely as the need arises. Finally—and it is now expected that this will be many years in the future—720 channels will be used at some of the busiest control towers and flight service stations. By satisfying the high altitude en route requirements on the 25 kHz spaced channels, FAA hopes that radio needs in the low altitude route structure, and at terminals and flight service stations, may be accommodated on 50 kHz channels for a number of years. At this point no firm estimates are being made as to just how many.

What does all this mean to aircraft owners, and prospective buyers, in terms of radio acquisition? The following guidelines are suggested:

- If you expect the airplane to be used above 18,000 feet, plan for 720 channel avionics in your future purchases. Much of the 360 channel equipment cannot be converted to 720.
- If most of your flying will be VFR at the lower altitudes, 360 channel radios will serve your purposes for at least the next five or six years. There is no reason to sell off existing radios or airplanes at the present time or in the near future. ■

Fighting Aircraft Fires

Whenever an airplane crashes, the peril of fire after impact is one of the thoughts that come first to mind—and with good reason. Approximately one-third of the fatal general aviation accidents involve a crash fire. In many cases the occupants of the airplane sustain less than major injuries, but may be stunned or otherwise prevented from exiting the airplane in time to avoid the consequences of flames. Since a great many crash-fires take place near or at airports, the chances of surviving such an accident are directly related to the availability of crash-rescue equipment.

Until May of this year, no Federal regulations existed with regard to the kind and amount of such equipment provided at an airport—in some cases local regulations were in effect. But Part 139 of the Federal Aviation Regulations now requires that all airports which serve air carrier aircraft must be certificated, and one key requirement of that certification is a minimal fire fighting unit, including an alarm system, vehicles and fire-extinguishing materials, and properly trained crews, capable of reaching a burning airplane within a given time frame.

The FAR separates certificated airports into five categories, according to the maximum size of the aircraft expected to be in use there: the smallest category is for aircraft under 90 feet, and the largest covers aircraft longer than 200 feet. In the smallest category an airport can satisfy the requirement with a single fire fighting truck carrying 500 pounds of dry chemical or its equivalent. At the largest airports there must be at least three fire trucks capable of carrying a total of 6,000 gallons of water for foam production.

Within three minutes of the first alarm, at least one fire truck must be able to reach the midpoint of the farthest runway and begin application of fire fighting agents. The other trucks must be capable of arriving at the scene within four and a half minutes. They must be able to discharge fluid fire fighting agents at the rate of at least 1,800 gallons per minute.

The improvement in fire fighting equipment at the largest airports in recent years has greatly improved the survival chances of passengers and crew. "A Study of U.S. Air Carrier Accidents Involving Fire 1955-1964," published by the Civil Aeronautics Board (then responsible for accident investigation) identified 12 "fire after impact" accidents involving air carrier aircraft. Of the 664 crewmembers and passengers on board, 294 persons received fatal injuries and 47 received serious injuries *attributable directly to post impact fire.* Some of these persons could have survived or escaped serious injury if rescue equipment had been able to reach them in time.

The report described an accident involving a United Air Lines DC-8 which crashed during its landing roll at Stapleton Airfield, Denver in 1961. The aircraft had experienced hydraulic difficulties following its takeoff from Omaha, and emergency equipment was alerted at Stapleton. After touchdown the aircraft slid off the runway and crashed into a truck before coming to a halt; fire broke out. The heat and smoke in the cabin were described as so intense that "Crew members had to feel the seats for occupants." Although emergency equipment had been alerted, it was approximately five minutes in reaching the scene: 17 passengers received fatal fire injuries.

The report offered recommendations for the "improved mobility and effectivity of fire fighting and rescue equipment," and called for integrated airborne and fire fighting units at high density airports.

Faster Response

Such recommendations, in conjunction with FAA's program of certificating air carrier airports, have indeed resulted in more effective fire fighting equipment at the larger airports. Compare that five minute response time with today's more highly developed fire fighting techniques, particularly as it was illustrated in the astonishingly fast response of the fire fighting equipment following a crash at Fort Lauderdale, Florida, in May 1972. In that accident a DC-9 had been making an IFR landing through a heavy rain storm. The airplane came in high over the runway, appeared to flare momentarily, and then dropped almost vertically in a hard touch down. The right main landing gear was torn off and the airplane skidded down the runway almost 3,000 feet before it pivoted and finally came to a stop. Witnesses reported that fire and black smoke appeared almost immediately after impact and that flames trailed the airplane as it careened down the runway.

The tower controller hit the alarm button immediately, and three fire trucks clanged out toward the burning airplane at the far end of the runway. The first truck was at the scene of the fire, applying foam, within the almost unbelievable time of 40 seconds, and the other two trucks arrived slightly behind it. The three trucks poured out 12,000 gallons of protein foam on the burning airplane, extinguishing the fire within two minutes. All ten people on board had survived the initial impact, and although three of them did sustain injuries they were still able to get clear of the wreckage and live to tell their tale of their ride in a flaming airplane.

But for the majority of private pilots, especially those who fly in and out of small airports, the fire/rescue situation is not altogether reassuring. There are more than 10,000 general aviation airports which have no Federal legal requirements for fire/rescue equipment. That equipment is, in many instances, non-existent or of doubtful value.

To help airport management and concerned aircraft operators become aware of fire hazards and the most effective way of preparing to deal with them, FAA has recently issued several Advisory Circulars with suggested levels of protection for airports of varying size, specifications for equipment, and information for rescue operations involving military and air carrier aircraft.

In most general aviation airports, economics plays the major role in determining the extent of the fire/rescue unit. Crash/fire equipment at an airport is like oxygen at a hospital—you do not need it very often, but when you do need it you need it urgently. Nothing burns as quickly as an airplane, when avgas or kerosene has been ignited on impact, and rescue efforts are almost always a race against time. Not only is "thermal injury" an obvious and immediate danger, but death from chemical asphyxiation, as a result of burnt or scorched interior furnishings, is always a possibility.

Firefighting equipment comes in all sizes and shapes to fit the requirements of the operation, but speed is always a paramount consideration. Survival time in a flaming aircraft cabin may be only a few seconds.

Since most small airports are unable to afford full-time fire crews, they commonly depend on part-time crews, made up of airport employees, pilots and others. If, as is often the case, months and even years go by without even so much as a crash alert taking place, a crew is likely to lose its effectiveness unless someone takes the initiative to arrange for frequent realistic drills and practice runs, and to assure that the equipment is maintained in first-class operable condition.

"Aircraft Fire and Rescue Facilities and Extinguishing Agents," (FAA AC No. 150/5210-6B, January 26, 1973), divides general aviation airports into two categories: those having at least 1,825 annual departures of aircraft longer than 30 feet but less than 45 feet; and those having at least that number of departures of aircraft more than 45 feet long but no longer than 60 feet. A Beech G50 Twin-Bonanza, for example, is 32 feet long; a Beech 99 is 45 feet; a Learjet Model 25B is 48 feet. Airports serving aircraft longer than 60 feet are advised to use the same type of fire fighting equipment specified for certificated airports.

The Advisory Circular explains the primary agents used to smother aircraft fires—aqueous film forming foam (AFFF), and protein foam. These primary agents are mixed with water, at a ratio of three to six percent, and then sprayed on the fire. They are particularly effective against fuel spill fires. Dry chemical powders or halocarbons are recommended for wheel fires, and various other specific agents have their special usages. One of the most important things fire fighters must understand is which agents can be used safely in enclosed or occupied areas, and which cannot; also, which of the various chemical agents are compatible in stimultaneous usage.

The smallest crash trucks should be capable of carrying 190 gallons of water and applying AFFF at the rate of 150 gallons per minute. If protein foam is used, the truck should carry 290 gallons of water and be able to spray it at the rate of 230 gallons per minute. The truck should also have the capacity to carry 300 pounds of dry chemical powder.

Other minimum standards include the ability of the truck to reach the midpoint of the farthest runway within three minutes, storage space for forcible entry tools, first aid kit, oxygen breathing equipment, etc.

Cost of Equipment

One of the objections to purchasing good fire fighting equipment is the high cost. A large fire fighting truck for a certificated airport, could cost up to $200,000. However, there are available today from a number of manufacturers skid-mounted units of fire fighting equipment which can be placed in an ordinary pick-up truck. These units, which carry both water and dry chemicals, are decidedly less expensive than the larger fire trucks, and can be purchased in price ranges from $2,500 to $6,000. The prices usually include a 100 foot length of hose and a pneumatic actuator. Some manufacturers will supply a pick-up truck with the skid already mounted.

Other equipment that has its place in the rescue activities of an airport is a four-wheel drive truck, a tractor, a helicopter, or even a snowmobile which will make it possible to reach a crash site off the airport. Many fire-after-impact crashes have occurred just outside the boundaries of an airport, often in a woods or marshy area, in some instances resulting in the deaths of occupants trapped in the cabin when appropriate vehicles for traversing the area were not immediately available. In a tragic accident at Charleston, West Va., a Lockheed *Constellation* skidded off of a wet runway and over an embankment, then caught fire when the fuel tanks ruptured. Emergency equipment responded immediately but could not get within 200 feet of the wreckage, because of the steep downgrade. One crew member and one passenger died of burns.

To avoid such tragedies, airport fire fight units should know the countryside surrounding the airport well, and be practiced in reaching any location within a few minutes of an alarm, utilizing appropriate vehicles. The most expensive and sophisticated equipment available is of less value in a crash fire than a handaxe if it cannot reach the crash site promptly.

Publications in addition to the Advisory Circular cited above which may be of interest to persons concerned with airport fire fighting equipment include:

- *"Minimum Needs for Airport Fire Fighting and Rescue Services," a report prepared for FAA by Gage-Babcock Associates, Inc., 1971. For sale by the National Technical Information Service, Springfield, Va., 22151. Price $3.00.*
- *"Fire and Rescue Service for Certificated Airports," (AC No. 150/5210-12, March 2, 1971), free from DOT Distribution Unit, TAD 484.3, Washington, D.C. 20590.*
- *"Guide Specifications for Water/Foam Type Aircraft Fire and Rescue Trucks," (AC No. 150/5220-10, May 26, 1972), also free from DOT TAD 484.3. 20590.* ■

PLEASE NOTE NEW PRICES. The revised GPO Price List for 1973 shows numerous price changes in the Federal Aviation Regulations. The 1973 price changes are shown in boldface in the righthand column. New transmittals (amendments to the FARs) are indicated for Volumes II, VI, VII, VIII, IX, X and XI.

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FARs

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(As of August 1, 1973)

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Part 171	Non-Federal Navigation Facilities (7)	

* Changes to individual airspace designations and airways descriptions, individual restricted areas and individual jet route descriptions are not included in the basic Parts 71, 73 and 75, respectively, because of their length and complexity. Such changes are published in the Federal Register and are included on appropriate aeronautical charts.

** Due to the complexity, length, and frequency of issuance, airworthiness directives, enroute IFR altitudes and standard instrument approach procedures are published in the Federal Register and are not included in basic Parts 39, 95 and 97. In addition, enroute IFR altitudes and instrument approach procedures are depicted on aeronautical charts.

Standard instrument approach procedures are published in the Federal Register by reference to FAA documents which are available for examination at the Rules Docket (AGC-24) and the National Flight Data Center, in FAA Headquarters, Washington, D. C. and at FAA Regional offices and Flight Inspection District Offices.

Parched Pilots

A "half-baked" airman is a menace at the controls.

The pilot had been slow in acknowledging his clearance to land, and in fact his acknowledgement had a curious detachment about it . . . *Four, Three Tango, number, uh, two . . . yeah, two to land behind green and . . . uh, Commander . . . yeah, I got him, I think. . . .*

The controller in the tower cab had picked up his field glasses and studied Four, Three Tango on final approach for Runway 16. The blue and white *Yankee* appeared to be lined up with the runway all right, and seemed to be at a proper glide angle, but there was a perceptible yawing as the small plane came over the threshold. The controller picked up his telephone and alerted Airport Operations:

"There's a single-engine aircraft touching down just now on Runway 16. Pilot sounded kind of funny, may have some kind of problem."

Three, Four Tango landed normally but instead of turning off at either of the taxiway exits continued down the runway at a slowly diminishing pace, finally coming to a halt in the tall grass of the overrun. There was no radio response to ground control. When the rescue squad reached the airplane they found the pilot, the sole occupant, slumped over the controls, bathed in sweat. He appeared to revive almost immediately as he was lifted out, and was able to walk, assisted, to the ambulance.

A heart attack?

A subsequent FAA investigation disclosed that the pilot, a business executive in his late 40s, had been playing golf for eight hours the day before at a desert course, had felt so parched in the evening that he had consumed ". . . perhaps four or five beers . . ." and had got up on the morning of his flight with a headache and a feeling of lassitude. Nevertheless, after several cups of black coffee, he had pre-flighted his airplane and flown back to town. Just prior to takeoff there had been a prolonged delay on the ground, due to glider activity over the airport, and the pilot remembered feeling "baked" in the cockpit. The flight had apparently been routine, although the pilot remembered very little about it and admitted that he might have been "a little inattentive."

The medical diagnosis was simple *dehydration*, a severe imbalance of the water content of his system—a common and not usually a serious summer complaint for most people. But for pilots who fly in spite of feeling obviously below par, dehydration can impair flight performance to the extent of resulting in a serious accident.

As in the case of the incident cited above, dehydration can inadvertently be aggravated by the sufferer. After losing a good deal of his body moisture to the desert sun during his day on the golf course, the pilot proceeded to increase his dehydration by imbibing a large quantity of alcohol. He breakfasted the next morning on coffee, a diuretic which further reduced his water balance. He baked out more moisture sitting in the closed cockpit prior to take off. And finally, cruising at 9,000 feet, he lost additional moisture during the flight because a decrease in pressure altitude has a negative effect on body water levels.

The symptoms of dehydration include headache, weakness, drowsiness, nausea and impaired vision. Speaking distinctly and movement of any kind may seem to require great effort. The cure consists simply of drinking water and preventing further water loss by resting and staying out of the sun or heated areas. The notion that "Once I get up in the air I'll feel all right" is dangerous. The cockpit of an airplane is not a resting room.

Vacationing pilots can prevent the onset of dehydration symptoms when they fly by taking reasonable precautions against excessive water loss on the day before (and the eve of) departure. The Federal Air Surgeon recommends that you:

- Acclimate yourself gradually to the environment, especially if your holiday is to be spent at a semi-tropical beach or desert spa. If your normal day is spent in an air-conditioned office or home, frolicking for hours in the hot sun is going to drain your liquid reserve.
- Maintain your water balance by drinking water frequently during the day. Realize that you lose moisture constantly when you are out in the sun or warm air, even when you are unaware of sweating.
- Use normal salt with your meals, but check with a doctor before taking salt pills. Some persons have bad reactions to the tablets.
- Recognize that alcohol in any form, even in "tall" drinks, has a dehydrating effect on the body. Caffeineted drinks, including iced tea, tend to stimulate urination and consequently loss of water.

It also helps to avoid letting your aircraft cockpit be turned into an oven by the sun. If you are unable to park it in a hangar or in the shade, try to cover the upper windows of low-wing aircraft with a tarpaulin. Take time to open air vents before taxiing, and take along a thermos of cold water. Nothing under the sun will quench your thirst like plain old H_2O. ■

A day in the sun can work wonders for the pilot's frame of mind—and drain his body fluids to the dehydration point.

Lake Reporting Service

When the shoreline disappears you need someone to watch over you.

Lake Superior is the largest freshwater lake in the world, and if you have ever flown over it in a light aircraft you will not have any difficulty remembering that fact. It is also one of the deepest (lowest sounding, 1,333 feet) and coldest, with water temperatures scarcely rising out of the 40s even in midsummer. You do not have to go down in the lake to remember this fact: it is enough to know that survival in an emergency over any of the Great Lakes usually depends on help getting to you in a matter of minutes.

For that reason FAA provides pilots with the Great Lakes Reporting Service, which covers all of Lakes Michigan and Erie and most of Lakes Superior and Huron (the U.S. segments of these two lakes). Fourteen flight service stations participate in this service, in cooperation with the Coast Guard, offering pilots an invaluable form of life and rescue insurance. Since the service was inaugurated, more than ten years ago, no pilot or aircraft using it has been lost.

In practice, the Lake Reporting Service is a specialized form of flight plan. The pilot whose flight path will take him over water reports in by radio to the nearest FSS as he leaves the shore line, and is reminded to continue to file radio reports every ten minutes until he reaches the opposite shore. If no report is received after 15 minutes from the last call-up, and the pilot does not respond or can not be reached by radio, an immediate alert is flashed to the Coast Guard, which launches search and rescue aircraft from the nearest base.

". . . Green Bay Radio, this is November 7134 Golf, Cessna 182 requesting Lake Reporting Service. We're at 2,500, just leaving Sturgeon Bay for Traverse City, heading one, one, zero. We'll be cruising at 5,500 feet, 130 knots. . . ."

"Roger, Cessna 34 Golf, this is Green Bay Radio. Call us at 10 minute intervals, more often if you like. Except some low level haze on the eastern shore. Are you instrument rated?"

"Negative."

Between Sturgeon Bay, Wisconsin and the nearest point of land on the Michigan shore (Point Betsie) there are 50 miles of open Lake Michigan. As long as the weather holds VFR and the aircraft functions normally, it should be a mere half hour jaunt in the 182, a simple flight even if you are a novice pilot. Still, that is a lot of wet stuff to cross over, if you have not tried it before, as you begin to realize when the Wisconsin shoreline disappears behind you and all you can see on all sides is shimmering water. The sun and the horizon are soon obscured by haze, and you find yourself staring at your compass with some suspicion. At the same time your ears are straining to detect an unusual sound from the engine, which seems to be laboring; you adjust the mixture with great care. You check your clock: is it possible that only six minutes have gone by? Well, they said you could check in as often as you liked. . . .

"Green Bay Radio, this is 34 Golf on Lake Reporting Service."

"34 Golf, Green Bay Radio, how are you doing?"

"High and dry, at 18 past the hour."

"Roger, 34 Golf, call us at 2:28."

It is reassuring to know that someone somewhere on terra firma is keeping track of your progress, and you find that you are no longer gripping the wheel as if it were a live rattler. It is your first experience at flying without visible reference to dry land, and you have learned that it can shake you up a bit. You understand now why they had suggested you fly around the lake rather than across it, and you have to admit that there was no real reason why losing an extra half hour or so that way would have upset your day . . . only your sense of pride.

Pride—and a willingness to ignore the fact that occasionally engines do fail, airplanes run out of gas, weather changes, and pilots sometimes panic—all this can lead to fatal consequences when flying over large bodies of water like the Great Lakes. The National Transportation Safety Board lists 22 aircraft "presumed" down in one of these lakes between 1964 and 1971, which have never been found. More recently, on March 15, 1973, a Beech 18 operating as an air taxi cargo service took off from Cleveland

Coast Guard **Albatross** sets out on patrol over Lake Michigan, where smog often combines with haze to eradicate landmarks.

Hopkins Airport bound for Detroit. The airplane disappeared from the radarscope ten miles over Lake Erie and no trace of it has been seen since.

On June 12 of this year a pilot flying over South Fox Island (Lake Michigan) spotted what appeared to be the wreckage of a small airplane in the woods alongside a grass strip. The island was owned by Lynn Dillin, a wealthy manufacturer who flew his own plane. FAA's GADO chief at Grand Rapids, Ralph Rudey, was flown by the Coast Guard up to the island, about 60 miles northwest of Traverse City, he found the bodies of Dillin and his wife in their plane. A subsequent investigation by FAA and NTSB disclosed that the Dillins had left for Fox Island on June 4, in a Cessna 180. Their point of departure was Northport, which juts out into Lake Michigan scarcely 20 miles southeast of the island; apparently they took off in the early evening, with some fog reported in the area. There was no contact with the FSS at Traverse City.

The changeability of the weather over and around large bodies of water such as the Great Lakes is one of the main reasons why VFR pilots should utilize either a regular flight plan or the Lake Reporting Service in this area. The characteristic movement of air masses from the polar regions, south and eastward across the lake, creates the so-called "lake effect"—the result of temperature differentials over adjoining land and water, which builds up clouds very quickly, especially toward the eastern portion.

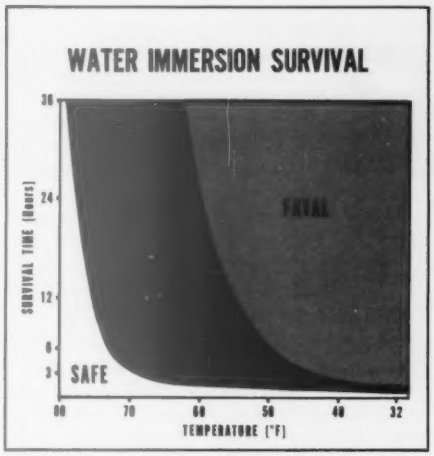
In winter the cold polar air masses absorb heat and moisture as they move over the lakes, and then are chilled by the colder temperature of the land, resulting in frequent sudden snow showers. In summer, the land areas may be warmer than the lakes, so that air masses are heated passing over land and cooled by their passage over water —also resulting in clouds, turbulence and precipitation. There is, in addition, a *diurnal*, or daily, effect caused by the more rapid cooling of the adjacent wooded land areas at night, in comparison with the more stable temperature of the Great Lakes, which tends to swath shorelines with evening fog.

The waters of the Great Lakes can be a hazard to pilots who are forced down by an emergency. Although the huge swells known to ocean travelers are not found on the lakes, nevertheless the lakes can develop a vicious, rapid chop which makes landing on them difficult and dangerous. For that reason, Lake Huron is said by mariners to be "the worst water in the world to sail on." The frequency and viciousness of its swells have broken up heavy ore barges.

The shoreline of the Great Lakes does have some sandy beaches on which an airplane could be landed in an emergency, but it also has many sheer cliffs, rocky ledges, and huge stands of timber which are not at all hospitable to airplanes in distress.

Because of their size, those areas of the lakes which do freeze in winter rarely develop a smooth surface (except in a few small bays), which means that pilots flying out to ice-fishing spots must be very cautious about landing conditions. Radio communication from a crippled airplane on the surface is almost nonexistent.

Every spring and summer hundreds of light aircraft migrate to the lake country because of its great natural beauty and recreational opportunities, and certainly there is nothing inherently dangerous about flying in the area. It is well served by numerous general aviation airports, FAA flight service stations and general aviation district offices. Coast Guard helicopters and amphibious "Albatross" flying boats stand ready to scramble into action from bases at Traverse City, Mich. and Glenview, Ill.; patrol boats are stationed at frequent intervals along the shores of all the lakes.



Average surface water temperatures in July: Lake Superior, 44°F.: Lake Michigan, 61°F.: Lake Huron, 59°F. According to the chart, survival time would range from about five minutes to half an hour. In February the surface temperature of Lake Superior is 32°F.

The pilot who avails himself of the many services offered, who appraises the situation honestly before departing and uses common sense, has no reason to be fearful about flying in this region. In most cases it is possible for the VFR pilot to work out an overland route instead of an over water route, and this is always recommended by FAA's Air Traffic Service. For those who must fly over water, requesting (and cooperating with) the Lake Reporting Service is a simple means of assuring speedy rescue should you get into difficulties. (Pilots who neglect to report in as required before leaving radio range of the monitoring station are apt to trigger massive air/sea hunts which could jeopardize the safety of others who are actually in need of assistance.)

In the rare instance where a pilot is unable to report back to the Lake Reporting Service because of radio failure, he should land at the nearest airport and report by telephone. When crossing any of the lakes he should cruise at no less than 5,500 feet, in order to maintain radio communication. He should acquaint himself carefully with all suitable landing areas along his flight path, and not descend below radio range without first informing the Air Traffic Service.

With these precautions in mind, the Great Lakes can be a sportsman's paradise for pilots as well as other vacationers. There is no need to pave the lake floors with vanished airplanes. ■

(Material and photographs for this article were provided by the Public Affairs Office of FAA's Great Lakes Region, GADO's and Flight Service Stations in the region, and by the United States Coast Guard base at Traverse City, Mich.)

The rugged Huron coastline has many sheer bluffs and shaggy, wooded hills that are not conducive to emergency landings.

Controllers at 14 FSSs, including those at Traverse City, **below**, cooperate with the Coast Guard to provide Lake Reporting Service.

Weather Whys:

DANGER: THUNDERSTORM AHEAD

This is the fifth in a series of articles prepared by meteorologists of the National Weather Service. Earlier articles have dealt with the basis of weather conditions, cold fronts, warm fronts and occluded fronts.

Scientists estimate that 44,000 thunderstorms lash the earth's surface every day. At any given moment, 1,800 of them are in action, spelling potential trouble for aircraft and pilots.

Thunderstorms come in many sizes and shapes but all carry a danger tag. Most pilots have been confronted with thunderstorm conditions at one time or another in their flying careers, but fortunately, not many have actually flown into a thunderstorm and out again. Those who have, however, present the most dramatic arguments for staying out of them.

Often called weather factories because of the great variety of weather they produce, thunderstorms commonly bring extreme fluctuations in ceiling and visibility, wind direction and speed, intensity of precipitation, and temperature. When thunderstorms form on a summer afternoon, the temperature is usually above 85 degrees, often in the 90's. The wind and rain produced by the storm may quickly send the temperature as low as 65 degrees in the surrounding area.

For aviators, thunderstorms can mean extreme turbulence as well as sustained updrafts and downdrafts. For aviators—and farmers—thunderstorms can mean damaging hail, lightning strikes, and electrical interference that snarls radio signals. Summed up, thunderstorms are meteorological monsters and a fundamental flying rule is to stay out of them.

Such storms may occur in this country at any time of the year, but in general they are rare in cold weather. They occur most frequently during the warmer hours of the warmer months and, geographically, most frequently in the southeastern United States. However, frequency of occurrence has nothing to do with intensity. No thunderstorm is ever described by the Weather Bureau as "light" in intensity, and any thunderstorm merits respect from pilots.

A thunderstorm is a shower cloud, or a collection of shower clouds, producing electrical discharges that are seen as lightning and heard as thunder by an observer on the ground. Thunderstorms occur individually as separate, widely-spaced storms, or in long lines roughly parallel to a front, ordinarily a cold front.

Although every thunderstorm begins as a cumulus cloud, only a few cumulus clouds actually become thunderstorms. This occurs when moisture-laden air is driven aloft, then cools by expansion in the lower pressures. Moisture in the air condenses. Condensation, in turn, releases heat and the air continues to rise and expand farther into the surrounding cooler upper atmosphere. An unstable chain reaction is in this way set up. The air may be driven aloft originally by the sun's heating the earth's surface beneath it or by being forced to climb the side of a mountain or frontal slope.

When a cumulus cloud begins to lose its clear-cut outlines on top and takes on a fuzzy appearance, it becomes a cumulonimbus cloud or thunderstorm.

Each thunderstorm is a family of convective cells in different stages of development and with individual circulation systems. As new cells form, others mature and dissipate. A single cell may be only a mile in diameter and have a life span of less than one hour. The entire storm, however, may be as large as 50 miles in diameter and may last six or more hours. Cloud tops can range from 16,000 to 60,000 feet, and the bases vary from 10,000 almost down to the ground. Bases are lowest in very moist, warm air and highest in drier air.

The life cycle of a thunderstorm cell passes through three stages—cumulus, mature and dissipating. In the cumulus stage, there is an updraft throughout the cell. The updraft is strongest at higher altitudes.

When rain first falls from the bottom of the cloud, the mature stage begins. The frictional drag of the precipitation contributes to the formation of a downdraft, which is usually most pronounced in the lower part of the cloud. The updraft continues, however, and is normally stronger than the downdraft.

The mature stage is the period of greatest intensity, with heavy rain and strong winds at ground level. Aircraft encounter the most severe turbulence and gusts during the mature stage. Hail is most often found in this stage.

When the updraft ceases and the downdraft spreads over the entire cell, the cell is dissipating. In a little while there is no water available to accelerate the descending air and the downdraft disappears.

Cells form and build with deceptive speed. Many pilots have found themselves suddenly enveloped by clouds they thought they were climbing above. Updrafts retain their velocity close to the top of the cell or stormcloud. Turbulence in the upper third of the storm cloud is greater than at lower levels.

The speed of the rising air current is often as swift as 50 feet per second and in extreme cases has been measured in excess of 80 feet per second. Flying through a typical thunderstorm at 155 knots with constant power setting and attitude, a plane can be forced up 2,000 feet by rising air. In exceptionally severe storms it may be hurled 5,000 feet up. Under the same conditions, a downdraft can force it downward 1,000 to 1,500 feet. When flying through saddles or in too narrow corridors between layers, an abrupt change from updraft to downdraft or vice versa can plunge the pilot into a cloud he had every intention of avoiding.

The greatest danger, however, is not in the sustained updraft or downdraft, but in the extreme gusts created by these opposed drafts when they are located next to each other. These gusts may subject the aircraft to stresses which exceed the maximum design limits of safety.

Electrical activity is a distinguishing feature of thunderstorms, as many pilots will confirm who have watched St. Elmo's fire dance around wing tips or form a blue circle following the propeller arc. But it can be more than a fascinating display. Severe damage may result to the aircraft. The current in a lightning stroke sometimes carries more than 100,000 amperes. At the least, a pilot may lose his radio and electrical systems, or find his radio receiver useless because of static. And there are cases of aircraft being struck by lightning.

The direction and speed of movement of the thunderstorm determine which way the pilot should go in flying around a storm. Unlike large-scale storms, there is no set pattern of circulation around a thunderstorm. Cirrus clouds streaming out from the top of a thunderstorm—which create the familiar "anvil"—indicate the storm's direction of movement. Safe circumnavigation may mean giving it a really wide berth.

Severe turbulence may be encountered in clear air several miles from the storm, and hail carried by strong winds may fall from seemingly clear air or from a type of cloud not associated with the storm.

Because of the potential hazards of thunderstom flying, it is obviously nothing short of folly for pilots of small aircraft to attempt to fly into them. In a number of cases, modern four-engine aircraft have suffered structural damage flying through violent thunderstorms.

The pilot of a small plane, inadvertently trapped in a thunderstorm, can increase his chances of a happy landing by following these rules:

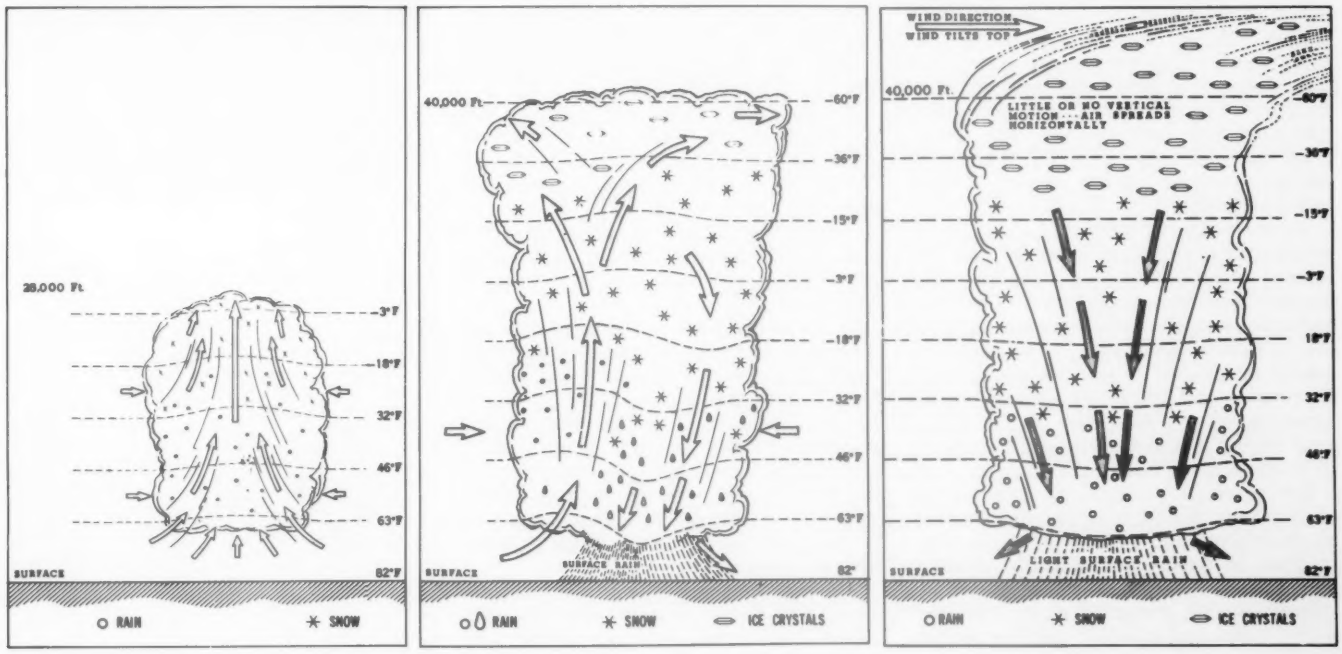
1. Reduce air speed to the aircraft's design rough air speed. This reduces structural stresses.
2. Fly at constant attitude and power settings as much as possible. (Erratic air speed readings result from vertical drafts passing the pitot tube and the clogging effects of rain.) Diving the aircraft to compensate for an updraft may build up excessive air speed. Climbing the plane in a downdraft may cause the air speed to approach the stalling speed.
3. Avoid all unnecessary maneuvering to prevent adding maneuver loads to those already imposed by turbulence.
4. Hold a reasonably constant heading that will take you through the storm in the shortest time.

At low levels, especially during landing and takeoff, gusty winds with frequent, radical changes in direction create hazards. Low level gustiness and turbulence is caused by downdrafts striking the earth and spreading out ahead of the storm. In severe storms, these gusts may reach speeds of 60-70 miles per hour. This horizontal rush of air may happen so suddenly that changes occur at the touchdown area before they are registered on wind-measuring equipment. Similar wind changes may take place during the landing roll and just after takeoff. Once down and parked, the pilot should check tiedown ropes and stakes to be sure they can withstand wind force.

Although the times and areas of thunderstorm development can be predicted rather accurately, no method has been developed for predicting the precise location of individual storms. However, most commercial aircraft carry weather radar to spot them. For general aviation pilots, the National Weather Service has a hundred weather surveillance radars to detect thunderstorm development and movement. Reports from these radars are transmitted over the weather teletypewriter circuits. They are available to pilots in flight on FAA radio broadcasts.

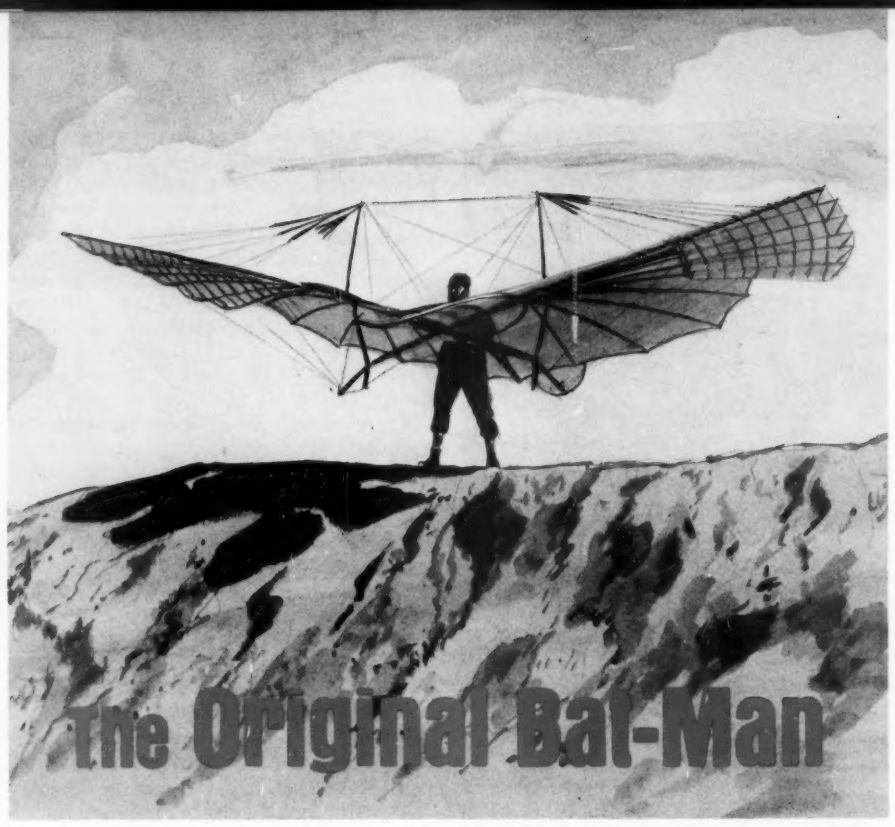
With these aids, plus weather reports, a sharp eye, common sense, and strict adherence to the number one rule—stay out of thunderstorms—a pilot can help assure himself of a safe flight. ■

Left—actual development of single-cell type thunderstorms. Top to bottom—cumulus, mature and dissipating stages. **Below**—cross-section of thunderstorm cells as they develop. Left to right—cells in the cumulus stage, in the mature stage and in dissipating stage.



Famous
FLYERS

Otto Lilienthal



The Original Bat-Man

On dark moonless nights, in the summer of 1861, two small boys were known to slip out of their home in the north German province of Mecklenburg and run furiously around the military parade ground beating the air with wings of beech veneer strapped to their arms. The boys were the brothers Gustav and Otto Lilienthal, aged 13 and 14, carrying out their flying experiments at night in order to escape the jibes of their schoolmates. From this covert beginning came the first practical accumulation of the knowledge of aerodynamics. Otto Lilienthal was the first really experienced pilot; he logged over 2,000 flights in gliders in a passionate effort to wrest the secret of flight from birds.

Otto was born on May 24, 1848, in the small town of Anklam, near the Baltic Sea. From an early age he and his younger brother, Gustav, were fascinated by the many flights of storks through the nearby countryside. If such a large ungainly bird could fly with such apparent little effort, why not they? The question never left Otto's mind and eventually led him to his death, but not before he had the answer virtually within his grasp.

An apt student of mechanics, Otto trained at the Berlin Technical Academy and became a successful engineer with his own machine shop. He was familiar with engines, and even invented one of his own, realizing that eventually some such force would be needed for practical flight. But the immediate problem that concerned him was one of aerodynamics—in sum, how to fly like a bird. Pursuit of this knowledge occupied all of his spare time, money and energy.

For years Otto (often accompanied by his brother) studied in detail the structure of many types of bird's wings and their methods of flight, with emphasis on wing area and lift. He developed formulas for determining the output of energy required to fly, hover and glide for different species of birds. In time he decided that the gull was the perfect creature of flight, and concentrated on analyzing the shape of its wings in alternate phases of flight. He was convinced that human flight would have to be sustained by a beating movement of wings, and that the wings would have to flex while moving, rather than remain rigid in a plane. Many of his theories were dead wrong, of course, but his conviction was strong enough to lead him into exhaustive experiments on wing flapping which closed the door on this long traversed avenue of thought for once and all.

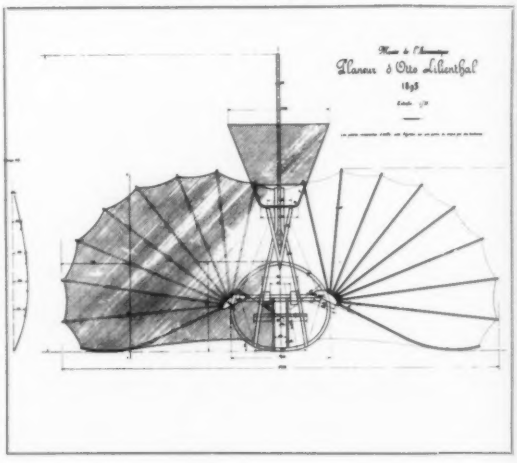
The value of Lilienthal's work lay less in his theoretical convictions (many of which were disproved by the Wrights and others) but in what he learned experimentally. As he himself wrote:

"In free flight, in the air, phenomena appear which the experimenter encounters nowhere else . . . and cannot be learned in any other way."

In 1889 Otto published most of his conclusions on flight in a pamphlet called, "The Flight of Birds as a Basis for the Art of Flying," and immediately set out to prove that man could fly like a bird. With the aid of faithful Gustav he built a large glider with batlike wings, strapped himself to it and flung himself off the rooftop of his home. The batwings did not enable him to fly, but checked his fall enough to spare him any broken bones.

Although convinced that his life had been spared by Divine Providence, Lilienthal shifted his takeoff point for subsequent flights to hilltops instead of rooftops. From atop a 50 foot mound built for him in a meadow he hurtled downhill time after time, clutching or strapped to various flying machines, constructed largely of muslin stretched over bamboo and cane ribs, braced by split willow rods on which he could rest his arms and swing his dangling body to alter the center of gravity. Over a seven year span he built 18 successive models of gliders, some of which even became "production models" that were sold.

Characteristic Lilienthal glider used bat-shaped wings which flapped in flight and a rudderless tail. Wright brothers placed elevator up front after German pilot crashed.



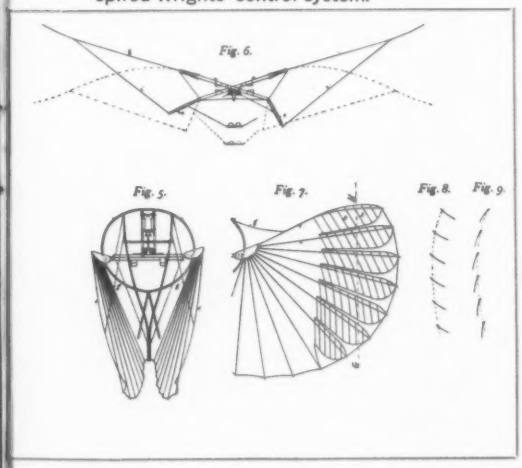
In a glider with an 18 foot wingspan and 150 square feet of surface he became the first man to *soar*—or actually reach an altitude higher than his point of departure. Eventually he learned to prolong his flights to over 1,000 feet horizontally, and to make partial turns. Soon his fame was spread around the world by the press, as journalists flocked to his home and his practice field. Photos of the "Bat Flyer" were published in hundreds of daily newspapers in all languages. He was the first airman to become a public hero.

Nevertheless he himself was impatient to achieve greater control over his gliders, and he experimented with fixed wings and a biplane design as well as movable wings, seeking always that enviable mobility of the gull that allowed it to pivot and glide with such ease. He was frustrated by his inability to twist the edges of his wings as he observed the gulls do in flight, and he experimented unsuccessfully with a carbonic-acid engine for flapping the wingtips.

On Sunday, April 9, 1896, he took advantage of favorable winds to soar to about 100 feet above ground and was testing a new method of steering when his craft apparently stalled, heeled over and crashed. The original "Bat-Man" died of a fractured spine. He was 48. "Sacrifices must be made," were the last words he gasped to his sobbing brother.

Because of his publications and his open-handed cooperation with other aviation pioneers, the knowledge and experience Otto Lilienthal had amassed with such patience and pain did not die with him, but served as beacons of inspiration for the Age of Flight, now close at hand. As the last of the "wing-flappers," his passing demonstrated, ironically, that man was not destined to fly like a bird, but like a man. ■

Bat wings could be folded tightly to body, like the living creature's wings, for easy transportation. Rudimentary wing-warping technique inspired Wrights' control system.



■ FRANGIBLE LIGHTS. Because of the need to install approach lights at runway elevation, the supporting structures can be quite high at some airports, depending on the terrain in the approach area. Lightweight structures of a frangible (easily breakable) nature have been approved by FAA which will support the lights under all operating conditions, yet minimize damage to an aircraft if accidentally struck during landing. Specifications are given in FAA Advisory Circular 150/5345-45, "Lightweight Approach Structure."

■ HANDLING HAZARDOUS MATERIALS on board aircraft requires special training. A new FAA regulation will prohibit the carriage of radioactive or oxidizing material, explosives, flammable liquids and solids, corrosive liquids, poisons, compressed gases or etiologic agents in air taxis or air carriers after December 6, 1973, unless all persons responsible for its carriage and handling have satisfactorily completed a training course within the preceding 12 months. Such materials must be marked conspicuously on the cargo-load manifest, and information concerning their handling must be contained in the operator's manual.

■ EMERGENCY LOCATOR TRANSMITTERS (ELT's) are the subject of two recent FAA Advisory Circulars. "Accidental or Unauthorized Activation of Emergency Locator Transmitters", AC 20-81, discusses licensing under FCC rules, methods of maintenance testing and sales demonstration, and responsibilities for unauthorized use of the transmitter. Regional Frequency Management Officers are listed, with addresses and phone numbers of each.

The second circular, AC 20-85, "Emergency Locator Transmitters and Receivers", provides information concerning the design, installation and use of the ELT. It reviews the experience and the problems of the past year and gives recommendations for installation and operational use, monitoring, alert and search procedures, and actions to be taken in the event of unintentional activation. Also included are suggested pilot practices for making the ELT program more effective, and diagrams of search techniques that can be used in a light aircraft.

■ FLIGHT INSTRUCTOR OF THE YEAR AWARD will be an annual event, sponsored jointly by FAA, the AOPA Air Safety Foundation and the aviation community, to recognize the contributions of the flight instructor to air safety. Instructions for submitting entries are given in an FAA Advisory Circular which also contains entry forms. Applications must be submitted by December 15 of each year and the national award is made in June. AC 61-52A, "Flight Instructor of the Year Award Program", is available from FAA.

ADVISORY CIRCULARS described in this column are available free from the DOT Distribution Unit, TAD-484.3, Washington, D.C. 20590.

EARLY START. Teenagers attending the YMCA Summer Aviation Camp in Lock Haven, Pa., are introduced to the fine points of a pre-flight inspection by instructor Denny Bressler (left). In addition to the usual camp activities such as horseback riding and water skiing, campers from 12 to 18 years have a choice of three flight programs in two-week sessions—"start,""solo prep" and "solo"—each offering a different range of ground school and dual flight instruction.

National Airport System Plan Issued in Twelve Volumes

FAA's new National Airport System Plan estimates that 700 new airports should be built in the United States over the next 10 years to keep pace with the projected growth of air traffic.

A total of 2,982 public airports make up the National Airport System at the present time. This number is expected to grow to 3,890 in 1977 and to 3,967 in 1982 as new airports are built and existing airports are added to the system.

The overall cost of building new airports and upgrading existing facilities over the next decade is estimated in the plan at $6.3 billion. Of this amount, $4.5 billion will be needed at airports which serve both the airlines and general aviation, $1.3 billion at airports which handle general aviation aircraft exclusively, and $.5 billion at designated "reliever" airports which serve to drain off general aviation traffic from the large hub facilities.

The 1972 edition of the National Airport System Plan (replacing the former National Airport Plan, last published in 1968) was prepared by FAA to serve as a guide for future airport development in the United States, as required by the Airport and Airway Development Act of 1970.

The plan identifies airport development projects of potential Federal interest on which Federal funds may be spent under the Airport Development Aid program. However, the listing of a project in the plan does not commit the Federal Government in any way to participate in its funding.

Although most of the recommended new airports are for general aviation aircraft, there is also a critical need for development of major air terminals to handle air carriers traffic in large metropolitan areas. Over the next 10 to 20 years, additional airports will be needed for New York City, St. Louis, Atlanta, Boston, Honolulu, Minneapolis/St. Paul, and Louisville.

The plan also foresees an increasing role for short-takeoff-and-landing (STOL) aircraft in relieving airfield congestion in major terminal areas. A total of 15 STOLports are included in the plan to meet the requirements for such service by 1977. Five of these would be in the New York area, with others in Philadelphia; Washington, D.C.; Seattle; Portland, Ore.; Los Angeles; San Francisco; Houston; Miami; and Jacksonville.

The new plan is published in 12 volumes—one for each of the 11 FAA regions plus a national summary. They are available from the Government Printing Office, Washington, D.C. 20402, at the following prices:

Volume		Postpaid
AAS	Narrative and National Summaries	$ 0.90
AAL	Alaskan Region	1.00
ACE	Central Region Mo., Iowa, Neb. and Kans.	2.10
AEA	Eastern Region N.Y., N.J., Pa., Del., Md., Va., W.Va. and District of Columbia.	2.35
AGL	Great Lakes Region Ohio, Ind., Ill., Mich., Wis. and Minn.	2.85
ANE	New England Region Maine, N.H., Vt., Mass., Conn. and R.I.	.95
ANW	Northwest Region Wash., Oreg. and Idaho	1.25
APC	Pacific-Asia Region Hawaii and W. Pacific	.60
ARM	Rocky Mountain Region Colo., Utah, Wyo., Mont., N. Dak. and S. Dak.	2.10
ASO	Southern Region Ky., Tenn., N.C., S.C., Ga., Ala., Miss., Fla., P.R. and V.I.	2.85
ASW	Southwest Region Ark., La., Okla., Tex. and N. Mex.	2.35
AWE	Western Region Calif., Nev. and Ariz.	2.10
		$21.40

Above volumes available at GPO Bookstores at slightly lower prices.

Historic College Park Airport in Nation's Capital Preserved

Historic College Park Airport in suburban Washington, D.C. has been purchased, along with an adjoining 26-acre park, by the Maryland National Capital Park and Planning Commission. College Park Airport, dedicated in 1908, claims to be the oldest operating airport in the world. It was the origin of many aviation firsts, among them the first U.S. Mail flight and the first radio-equipped flight. At one time Orville and Wilbur Wright trained military flight instructors at College Park.

The transaction has allayed the concern of aviation conservationists who have long feared the historic landing field might be absorbed by industrial development. Although there are no present plans to expand the airport, it will be operated as a restricted-use facility. There has been some speculation about building an aviation museum at the College Park site. Both the Smithsonian Institution and the University of Maryland have volunteered assistance for such a project.

Wilderness Flyers Organize

A special group of float plane pilots, who call themselves the "Wilderness Flyers", have been flying community service projects into remote areas where float planes can operate to an advantage over land planes. During missions in the past year in New York and New Jersey the group has helped to locate several forest fires in time to contain them. Additional volunteers are being sought who will offer their services in emergencies such as floods, forest fires, distressed boaters and hikers, etc.

"Wilderness Flyers" has been organized by the U.S. Seaplane Pilots Assn. of Little Ferry, N.J.

FAA Alert List

The following aircraft were listed at press time with the FAA Office of Air Transportation Security as stolen or missing:

Beech 35	N2967V
Cessna 150	N22487
Cessna 172	N3011U
Cessna 182	N5706B
Cessna 210	N3884Y
Cessna 210	N5775J
Cessna 310	N8009M
Piper PA-23	N14075
Piper PA-28	N6542J
Piper PA-32	N8919N
Stinson 75	N8039K

If you see any of these aircraft advise the nearest FAA flight service station at once. If your aircraft is stolen, notify the local police and FSS.

• Approved Home Study

An article in the February 1973 issue ("New Rules for Airmen Certification") mentions an approved home study ground school course that could be used by students preparing for the FAA written pilot examinations. Where can I get information on how and where one may apply for such approval?

Paul T. Anderson
Los Angeles, Calif.

Information on the new pilot certification rules (Part 61)—scheduled to go into effect November 1, 1973—is contained in a new FAA Advisory Circular which will go to press shortly. It will describe guidelines on approved home study, including instructions for preparing your own home study course. When it is available, FAA AVIATION NEWS will advise how to get "Part 61 (Revised). Certification: Pilots and Flight Instructors."

• ATIS and the Freqs

A June, 1973 article, "Freedom From Fear" concerning Mode C transponder requirements points out that one of the major advantages of this equipment is "less congestion on the frequencies." In view of this, how does FAA justify the imposition within the near future of 25 kHz? At the same time FAA does such stupid things as converting needed existing communication frequencies to ATIS use.

Howard L. Smith, M.D.
Marlin, Texas

In the face of a serious (critical in some areas) frequency shortage FAA is using every conceivable means of conserving precious radio time, including the projected use of transponders and automatic altitude reporting equipment in high altitudes and at busier terminals. As a result of these various efforts it is now believed the use of 25 kHz spacing can be postponed for an indefinite period in the lower altitudes most used by small VFR aircraft. (See "Channel Splitting." Page 3).

Automatic Terminal Information Service (ATIS) is also considered a valuable communications-saving tool, since it reduces very considerably the transmissions between pilots and controllers. At the latest count there were 111 ATIS's, of which 59 were on NAVAIDs and 52 on discrete frequencies. This means that less than one percent of the frequency assignments are required for ATIS.

It is important to realize that while only 360 channels in this band are currently in use, each frequency is used many times in various parts of the country. There are 5,349 actual frequency assignments in the band. Some misunderstanding of this usage may be due to a recent editorial in an aviation magazine which calculated mistakenly that present and planned ATIS assignments, totalling 106, would use up 30 percent of the 360 channels. The fact is that such a total would use about two percent of the 5,349 assignments.

Communications channels are used for ATIS only when no NAVAID is usable, as at locations where no one VOR is receivable over the entire terminal area and on the airport surface.

• Abbreviating Call-ups

I have a suggestion for expediting aircraft communications which I would like you to pass on to the FCC. I always use just the last three numbers of my airplane registration (20W) for my initial callup of a facility. Then when they reply I give my complete number (7120W) and transmit my message. Seldom is a facility able to copy the complete number on initial callup, and I get replies such as "Aircraft calling Wichita approach, say again." The controller can easily remember two or three numbers to reply to, while he prepares himself and directs his undivided attention to your complete identification and transmission.

Dan Caliendo, M.D.
Wichita, Kans.

We have forwarded your suggestion to FCC; however we do not believe that adopting it would reduce radio congestion. In fact it could increase radio congestion in cases where the controller is prepared for the call, as in a hand-off from another controller. In some cases it could even compromise safety if a controller during a busy session would issue instructions on the assumption that the caller was an aircraft already in his system. All things considered we feel that air safety requires the full identification on initial contact.

• Chauvinism?

As a female employee of FAA I find one of your safety cartoons, however humorously intended, unnecessarily chauvinistic and insulting in its attitude toward women. The cartoon shows a plane in imminent danger from bad weather and frost (which affects aircraft lift). Two men inside, obviously understanding the danger, are portrayed as panicked, while two women passengers have foolishly contented grins on their faces, oblivious to the danger.

The point of the cartoon obviously is not female ineptitude but a warning to pilots. Still I feel it sustains old and prejudiced attitudes about women's aptitude for jobs and responsibilities that once were reserved only for men, and is contradictory to the Federal government's usual concern with discrimination on the ground of sex.

Patricia Storm
Joplin, Mo.

• Unacknowledged Art

I'm sure that your readers would like to know that the line drawings in the article on ADF equipment (pages 8 and 9—April 1973) came from the "Advanced Pilot's Flight Manual" published by the Iowa State University Press, Ames, Iowa. It was not mentioned in the article.

William Kershner
Sewanee, Tenn.

An oversight. Grateful acknowledgement is herewith made.

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• Compulsory Instrument Ratings?

I recently received a letter from Alexander P. Butterfield, the new FAA Administrator expressing an interest in "our common role in building the future of civil aviation". The next week I saw in the newspaper that FAA has ruled that after November 1974 instrument ratings will be compulsory for private pilots. It looks like general aviation and the private pilot may well become more victims of the Washington bureaucracy.

Gale E. Merrick
South Bend, Ind.

You (and the many other pilots who became alarmed about their flying future after reading that instrument ratings were to become mandatory for private pilots) will be happy to learn that the news story you speak of was based on a wire service error. After November 1, 1974 a commercial pilot applicant *must hold an instrument rating if he desires unrestricted commercial pilot privileges. (If he is not IFR-rated his certificate will* note *that he cannot carry passengers for hire on cross-country flights of more than 50 miles, or at night.) The new rules will* not *require holders of commercial or applicants for private pilot certificates to obtain an instrument rating.*

• First Around the Globe

In your "Famous Flyers" yarn in the May issue your writer states that a Fokker was the first airplane to circle the globe. What happened to the Douglas *Cruisers?* The first global flight was accomplished between April 6, 1924 and September 28, in a group of Douglas-built airplanes under the command of various U.S. Army pilots. No aviation historian talks about a Fokker.

Russell C. Mock
Columbus, Ohio

Technically you are correct, of course, although the Douglas World Cruisers *in 1924 followed the land bridges across the northern Pacific and Atlantic, made 57 stops, and took nearly six months to complete the trip—which did not prove anything of great significance for aviation. Fokker aircraft pioneered such flights as the first non-stop crossing of the U.S. (Kelly-Macready, 1923), the first polar flight (Byrd-Bennett, 1924) and the first transPacific flight (Smith-Ulm, 1928) which clearly established the endurance capabilities of aircraft.*

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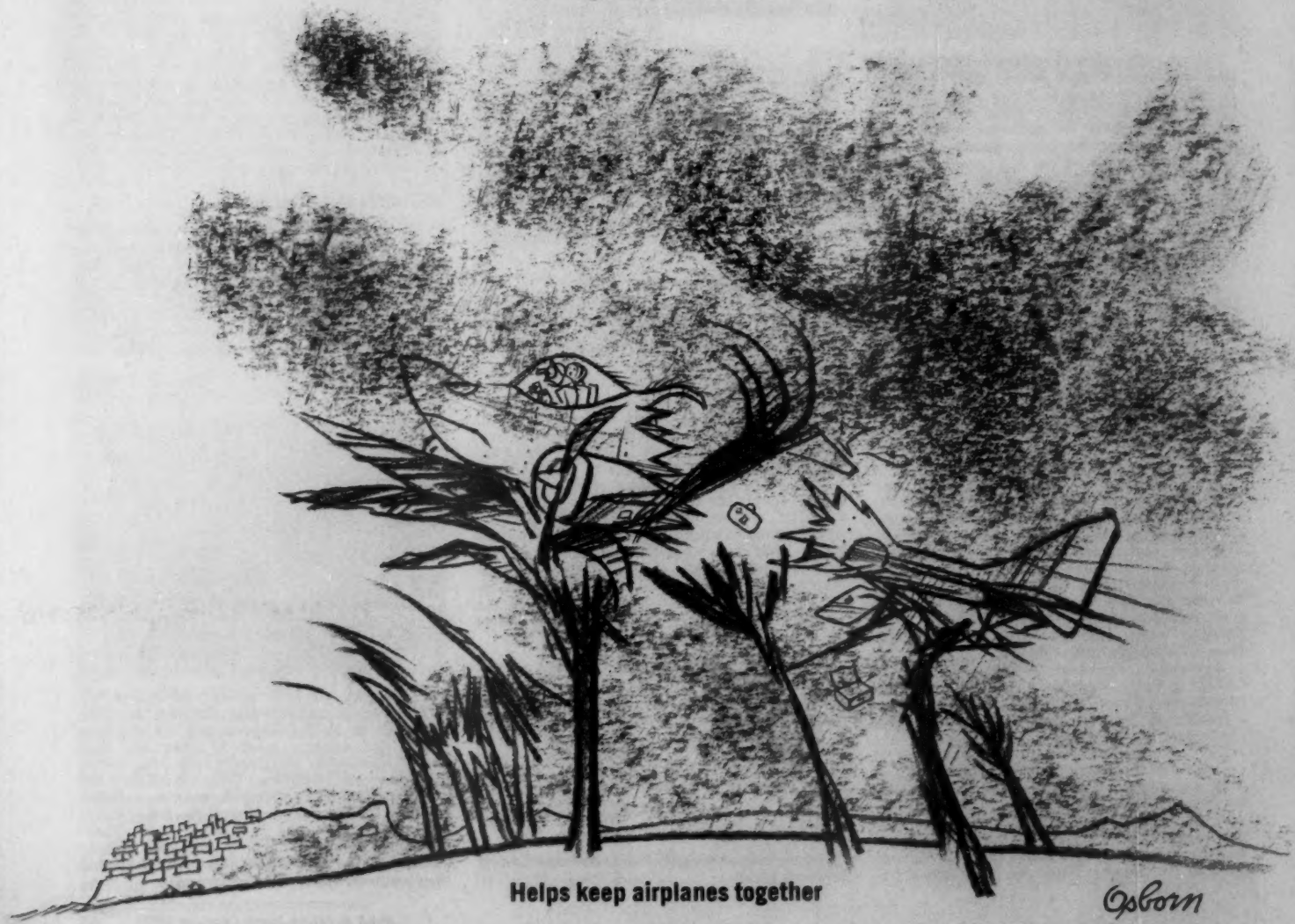

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